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A PRELIMINARY REPORT
ON THE HESPERIIDAE
OF BAJA CALIFORNIA (LEPIDOPTERA)

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INTRODUCTION

A contribution to an understanding of the biota of Baja California has been the objective of a number of biological explorations and reports. Since 1888 the California Academy of Sciences has played an especially prominent role in this regard (Nelson, 1921, pp. 143-144; Michelbacher and Ross, 1942, p. 1). Numerous entomological collections have been made, but until relatively recently the Lepidoptera of the peninsula were little studied. In his list of the Lepidoptera of Mexico, Hoffmann in 1941 attributed a number of hesperiids to the Baja California fauna, and in 1948, Rindge listed in some detail the butterflies of the region, including twenty-one species of skippers. More recently Powell (1958) and Patterson and Powell (1959) added substantially to the lists by Hoffmann and Rindge owing to their repeated collecting in Baja California Norte. Species of HesperIIDae reported for the peninsula now number exactly fifty. This figure may represent as little as one-half the total to be expected ultimately, and it includes several of quite doubtful occurrence.

There is need for much additional collecting on the peninsula, certainly in the more remote regions; but even along the well traveled routes. The hesperiid fauna has only been sampled as a by-product of general collecting in the region, and, although collectors have returned with many skippers, much

is certain to have been overlooked. In addition, considering the climatic whimsy of this generally xeric region, together with the vast relatively inaccessible or inhospitable portions of the area, it is clear that much concentrated work must be done before we can consider the Hesperiidæ well understood in Baja California.

The incompleteness of our knowledge of the total skipper fauna of Baja California notwithstanding, a fairly recognizable picture as to the origins of that fauna emerges from the portions thus far known. The hesperiid fauna of the peninsula is composed of three principal elements. The first of these is intrusive and its nature might be presumed from an examination of the conformation and position of the peninsula on maps as a California appendage in Mexico. The California element, however, presently extends into Baja California only about a quarter of the length of the peninsula, being essentially restricted to the northern boreal ranges and the coastal lowlands west of these. It is comprised of the fauna of boreal southern California and the Pacific slope. Certain endemic derivatives of this fauna in the extreme south of the peninsula represent insular relicts.

A second intrusive element enters the peninsula from the northeast and consists of austral representatives of the Sonoran biotic province of the southwestern United States and northwestern Mexico. Many of the species representing this portion of the fauna occur in Baja California as disjunct populations far removed from the nearest population clusters to the east and northeast, relicts of former closer association of habitable environments. Such species occur in the upper austral or in the dry boreal portions of the northern boreal ranges. Lower austral species of this fauna are present through the extensive eastern and central desert regions of the peninsula, and in the northwest mingle to some extent with the lowland California fauna. The Sonoran element of the central deserts penetrates well into the southern part of the peninsula and mingles with the neo-tropical element in the lowlands of the Cape Region. A few endemic derivatives of upper austral species of this Sonoran element are isolated in the higher mountains of the Cape Region.

The most conspicuous fauna in the Cape Region is comprised of a neo-tropical element which is widely distributed on the mainland of Mexico, principally species which also attain the sub-boreal regions of the central plateau of Mexico. Such species are restricted, or nearly so, to the once isolated Cape Region of the peninsula, but some extend northward along the Sierra de la Giganta to the vicinity of Concepcion Bay on the gulf coast.

This paper is intended to represent a compilation of all published reports of Hesperiidæ in Baja California, with added comments concerning the probable distribution of the species. Any compilation, in attempting to summarize the pertinent published knowledge, also serves to emphasize, intentionally or not, the incompleteness of that knowledge. To state that the lat-

ter function constitutes the major contribution of this paper would be to suggest a cliché, in the form of a well known Shakespearian title, as a handy means of reference to what follows here. I have no intention of doing that. Nevertheless, it is my hope that the quite conspicuous gaps in our knowledge, together with the brief suggestions offered as to the nature of some of the problems, will serve as well as my mistakes to stimulate further interest in the skippers of this region. A good deal of such interest and resultant field work is essential before sufficient information will accumulate to make possible the publication of a comprehensive treatment on the Hesperiidæ of Baja California.

All material cited under additional records is in the collection of the California Academy of Sciences unless the parenthetical abbreviation symbols (AMNH) or (CIS) indicate otherwise. Species designated with an asterisk (*) are those of which I have not seen specimens from Baja California. The genus *Erynnis* Schrank is omitted from this paper because Dr. John M. Burns is treating the Baja California material in considerable detail in his monograph of this group. The Megathymidæ, considered a separate family of skippers, also are not treated here.

In view of the fragmentary state of our knowledge of this family in Baja California I am including no keys or descriptions in this paper. No new names are introduced here. In several instances rather striking geographic segregates seem to be suggested but, owing to insufficient material, any such conclusions must remain tentative. In these cases, a brief diagnostic statement is provided indicating the nature of variation reflected by the available sample. In other instances, some geographic variation of a minor nature is indicated in adequate samples, but such diversion is not considered to be of sufficient magnitude to warrant a subspecific designation.

The terminal bibliography contains only papers dealing with or citing Baja California. The synonymical citations provided for each species include, aside from the original description, only references specifically placing that name on the faunal list for Baja California, and I have attempted to include all such citations. Published statements which embrace this region by inference from a broad generalization of geographic range, for example "En todo la Republica" for Mexico, are neither cited, nor interpreted, as constituting a reference to Baja California for the species concerned. Hoffmann (1941) made many such generalized statements: some for species almost certainly not inhabitants of this region, others for species definitely recorded for the area, and still others for species which probably occur there but have not yet been reported. Hoffmann, in referring a species to the fauna of Baja California, provided no definite locality data. There is reason to doubt that he actually had seen any specimens from that region. It is known that he obtained a collection from Medlar for San Diego County, California, and there seems to be no material from Baja California in the Hoffmann col-

lection at the American Museum (Rindge, *in lit*). It is quite possible that from the San Diego County collection and the several publications dealing with southern California butterflies, he inferred the composition of the fauna of Baja California Norte.

The important works by Eisen (1895) and by Nelson (1921) provide excellent physical and biotic descriptions of the region. Historically important discussions of entomological expeditions to the peninsula are presented in the two above-mentioned works, as well as by Slevin (1923) and Michelbacher and Ross (1942). Localities mentioned in previous accounts may be located on one or more of the maps provided by Eisen (1895), Nelson (1921), Michelbacher and Ross (1941), and Patterson and Powell (1959).

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Mr. Hugh B. Leech and Dr. Edward S. Ross, both of the California Academy of Sciences, and Mr. Don Patterson of Burlingame, California, provided many useful impressions gained during their trips to the Cape Region. Dr. Powell also contributed important comments and observations concerning the region and fauna with which he was familiar. Dr. Rindge very kindly examined critical parts of the Carlos Hoffmann collection for me and offered several helpful suggestions. To all I extend my thanks.

The expeditions of H. B. Leech (1959) and D. Patterson (1959) to the Cape Region of the peninsula were made possible through the generous support of the Belvedere Foundation.

SPECIES TREATED

Epargyreus clarus clarus (Cramer).

Papilio clarus CRAMER, 1779, Pap. Exot., vol. 1, p. 66, pl. 41, figs. E, F.

Proteides clarus, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 245.

Epargyreus clarus, DIXON, 1955, Ent. News, vol. 66, pp. 6, 7.

Epargyreus clarus ? huachuca, PATTERSON and POWELL (not Dixon, 1955), 1959, Jour. Lep. Soc., vol. 13, p. 232.

Epargyreus clarus is to be expected only in the northern boreal ranges of the peninsula. The Sierra San Pedro Martir represents the southern distributional limit of the Pacific slope populations of this species. The specimen referred to by Patterson and Powell has been examined and does not resemble

the populations of southeastern Arizona as defined by Dixon (1955, pp. 7-9). No additional material has been seen.

**Epargyreus exadeus* (Cramer).

Papilio exadeus CRAMER, 1782, Pap. Exot., vol. 3, p. 118, pl. 260, fig. C.
Proteides exadeus, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 245.

Hoffmann's reference to the occurrence of this species in Baja California is open to question for two reasons. The genus was revised in 1952 and the specific definitions of five Mexican species superficially resembling *E. exadeus* were tentatively set forth at that time. Consequently many of the previous references to this species applied to one or more of these five insects, and the Hoffmann reference conceivably applied to all five species. Without examination of the specimen upon which the Baja California record was based it is impossible to do other than cite Hoffmann's determination.

There is in addition, some doubt that Hoffmann had seen any specimens of this complex from Baja California. As previously mentioned, Hoffmann may have attributed many species to the peninsula by inference from published reports on southern California and Arizona lepidoptera. "*Epargyreus exadeus*" has been reported to occur in southern California but it certainly cannot be considered resident in that state. Rindge (*in lit.*) reports he was unable to locate in the American Museum any Hoffmann specimens of this complex from Baja California.

Chioides catillus albofasciatus (Hewitson).

Eudamus albofasciatus HEWITSON, 1867, Desc. Hesp., p. 3.

Chioides albofasciatus, RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 305.

This species is distributed throughout the Cape Region and the adjacent offshore islands. It extends northward along the Sierra de la Giganta where it is probably confined to the relatively lush canyon bottoms.

Specimens from the Cape Region reflect the insular nature of the area in that they slightly differ phenotypically from the populations of the mainland. The wings are much more broadly dark, almost blackish brown above and below. On the under surface the gray marginal overscaling is more extensive and prominent, and the rusty patches adjacent to the white band of the hindwings are more contrasted to the darker ground color. The translucent spots of the forewing above are well developed with a costal spot usually distinct above the cell, and there is a tendency for the normally small spot in cell Cu 2 (space 1b) to be enlarged across the cell as a constricted or double spot. The forewings tend to be more produced apically than is usual, particularly in the females.

ADDITIONAL RECORDS: *Baja California*: San Pedro, about 4 miles S. Todos Santos, 1 female, I-13-59 (H. B. Leech); 2 miles N. Colonia Calles on Highway Sur 17, 2 males, 1 female, I-15-59 (H. B. Leech); 3 miles NW. La Palmilla on Highway Sur 19, 2 males, I-18-59 (H. B. Leech); Rancho Potrero, 14 mi. up canyon San Pedro from Caduano, 1 male, V-9-59 (D. Patterson), 4 males, 1 female, V-10-59 (D. Patterson).

**Codatractus arizonensis* (Skinner).

Heteropia melon var *arizonensis* SKINNER, 1905, Ent. News, vol. 16, p. 232.
Heteropia cyda, RINDGE (not Godman, 1901), 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 306.

The specimen recorded by Rindge is tentatively placed in this species. The specimen was not located in the American Museum material and so could not be re-examined. Superficially *C. cyda* somewhat resembles *C. arizonensis* and, based upon the mainland distribution of the genus in Mexico, *C. arizonensis* is most likely to be the species represented in the Cape Region of the peninsula. *Codatractus arizonensis* is reasonably to be expected in this area and until such time as the specimen is located or further material becomes available, the name is provisionally included on the faunal list.

Goniurus proteus proteus (Linnaeus).

Papilio proteus LINNAEUS, 1758, Syst. Nat., 10th Ed., vol. 1, p. 484.
Urbanus proteus, RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 305.

Populations in Baja California do not significantly differ from mainland populations of this widespread species. *Goniurus proteus* is well established in the Cape Region but may also be expected in the northern state west of the Sierra Juarez and the Sierra San Pedro Martir.

ADDITIONAL RECORDS: San Pedro, about 4 miles S. Todos Santos, 1 female, I-30-59 (H. B. Leech); 3.4 miles NE. Cabo San Lucas on Highway Sur 19, 1 female, I-1-59 (H. B. Leech); Buena Vista, Highway Sur 19, 2 females, I-6-59 (H. B. Leech); 39.5 miles S. La Paz on road to Todos Santos, 2 females, XII-24-58 (H. B. Leech); near ocean beach 2 miles E. El Coyote, NE. La Paz, 3 males, XII-30-58 (H. B. Leech).

Goniurus dorantes calafia (Williams).

Eudamus dorantes race *calafia* WILLIAMS, 1926, Trans. Amer. Ent. Soc., vol. 52, p. 63, pl. 2, fig. 2.
Urbanus dorantes calafia, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 242.
Urbanus dorantes, RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 305.

This widespread species, although individually variable, does not display any well marked geographical variation through its mainland range from southwestern United States to Argentina and Chile. Most insular populations, however, are quite distinctive and several island subspecies are recognized. The populations inhabiting the Cape Region of Baja California are consistently different in several characteristics from those of the nearby mainland. Skinner's name for this population has been either ignored or synonymized with that for the nomenotypic subspecies by all authors but Hoffmann, who very likely had seen no material from the peninsula. The name is here re-instated and, since Skinner's description was very brief and his figure rather poor, I will emphasize the diagnostic features as follows:

Wings above as in *G. dorantes dorantes* except that in fresh specimens the abundant pale overscaling produces a quite grizzled appearance, and the basal anal and discal hair vestiture is pale gray-olive which conspicuously contrasts with the dark brown of the hairless outer portions of the wings. The hindwings below largely lack a violet cast and are much paler, being cream-brown to pale gray except for the dark bands. The marginal area distad of the discal dark band is conspicuously pale, often quite whitish, as is the cell and costal area to the apex of the forewing.

ADDITIONAL RECORDS: 39.5 miles S. La Paz on road to Todos Santos, 2 males, 1 female, XII-24-58 (H. B. Leech); 17.5 miles N. Todos Santos, road to La Paz, 3 males XII-26-58 (H. B. Leech); 5.5 miles NW. Todos Santos, 1 female, I-13-59 (H. B. Leech); Punta Lobos, 1 mile SE. Todos Santos, 1 male, 1 female, XII-25-58 (H. B. Leech); 2 miles N. Coloma Calles on Highway Sur 17, 1 male, I-15-59 (H. B. Leech); 2 miles N. Cabo San Lucas on Highway Sur 17, 1 male, I-15-59 (H. B. Leech); Cabo San Lucas, 2 males, I-16-59 (H. B. Leech); 3.4 miles NE. Cabo San Lucas on Highway Sur 19, 4 males, 2 females, I-1-59 (H. B. Leech); 7.7 miles NE. Cabo San Lucas, 1 male, I-1-59 (H. B. Leech); 7 miles N. Santa Anita on Highway Sur 19, 1 male, 5 females, I-7-59 (H. B. Leech); 1.3 miles N. San Jose Viejo on Highway Sur 19, 1 male, I-7-59 (H. B. Leech); Rancho Cayucos, 7 miles up Canyon San Pedro from Caduano, 1 male, 1 female, V-7-59 (D. Patterson); Rancho Potrero, 14 miles up Canyon San Pedro from Caduano, 1 male, V-9-59 (D. Patterson); Bahia de los Muertos, 1 female, XII-20-58 (H. B. Leech); 18.5 miles from La Paz airport, Los Planes Road, 3 males, 2 females, XII-19-58 (H. B. Leech); 14.5 miles E. La Paz on road to Las Cruces, 1 male, 2 females, I-4-59 (H. B. Leech).

Thorybes pylades (Scudder).

Eudamus pylades SCUDDER, 1870, Proc. Bost. Soc. Nat. Hist., vol. 13, p.207.

Thorybes pylades, PATTERSON and POWELL, 1959, Jour. Lep. Soc., vol. 13, pp. 232, 233.

This is a species extending into the northern boreal ranges of Baja California from the Pacific slope to the north. Populations of *T. pylades* may exist in the Sierra de la Victoria in the Cape Region as well, in which case it would not be surprising if they comprised a well defined subspecies.

No material other than that mentioned by Patterson and Powell has been seen.

****Thorybes mexicana mexicana* (Herrich-Schäffer).**

Eudamus mexicana HERRICH-SCHÄFFER, 1869, Corr. Blatt. Regensb., vol. 23, p. 188.

Thorybes mexicana, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 249.

Thorybes mexicana must be considered of doubtful occurrence in Baja California. Hoffmann's record is very likely based upon southern California specimens of *T. pylades* which were misidentified in several earlier publications as *T. mexicana*.

***Cogia hippalus* subsp.**

Eudamus hippalus EDWARDS, 1882, Papilio, vol. 2, p. 27.

This species has not previously been reported for Baja California. If the population shares the characteristics of the specimen described below, it is sufficiently distinct to warrant a subspecific designation. Additional material must be available, of course, before the population can be adequately defined.

The specimen is slightly smaller and darker than most mainland representatives of *C. hippalus*, measuring 19 mm. from base to apex of one forewing (compared with an average of about 22 mm.). Forewing above with discal spots very slender except for that in cell M_3 (space 3) which is nearly quadrate, much less than twice as long as broad. Costal spot above discal cell very elongate, its length nearly twice the greatest width of the cell spot. Basal and discal hair vestiture brown, without any ochre tint, hence scarcely contrasting to brown ground color of wings. Fringes light brown with dark-brown broad checkering suggested, but vanal portion of fringe smoky gray. Hindwings with fringe strongly checkered, the dark-brown portions broad, exceeding the gray areas which are brown basally. The vanal pale portion of fringe becoming dirty white outwardly. Below as normal but dark bands of hindwing very broad, their width equal to that of intervening paler violet-brown areas. No whitish bloom marginal to discal dark band. Fringe brown with narrow whitish interruptions.

Populations more closely allied to the nomenotypic subspecies may occur in the Sierra San Pedro Martir. The specimen recorded below represents a population in the Sierra de la Victoria of the Cape Region: Rancho Potrero, 14 miles up Canyon San Pedro from Caduano, 1 male, V-11-59 (D. Patterson).

Staphylus ceos (Edwards).

Pholisora ceos EDWARDS, 1882, Papilio, vol. 2, p. 140.

Staphylos ceos, PATTERSON and POWELL, 1959, Jour. Lep. Soc., vol. 13, p. 232.

This species is known only from the Sierra San Pedro Martir at present. It represents part of the disjunct intrusive element from the Sonoran mountain districts of southeastern Arizona and northwestern Mexico far to the east. The species should also occur in the Cape Region.

No additional material has been examined.

**Systasea pulverulenta* (Felder).

Leucochitonea pulverulenta FELDER, 1869, Verh. Zool. Bot. Ges. Wien, vol. 19, p. 478.

Antigonus pulverulenta, RINDGE (in part?), 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 307.

If this species occurs in Baja California at all it is probably restricted to the Cape Region. I have examined a portion of the material reported under this name by Rindge (1948, p. 307) but have not seen specimens which he recorded from Cape San Lucas, Pulpito Bay, or Puerto Escondido. It is likely that these specimens, like all the Baja California material of this genus I have examined, belong to the following species. The records of this species on the peninsula require verification.

Systasea evansi (Bell).

Antigonus evansi BELL, 1941, Ent. News, vol. 52, pp. 165-167, fig. 2.

Antigonus pulverulenta, RINDGE (in part) (not Felder, 1869), 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 307.

Systasea evansi, POWELL, 1958, Lepid. News, vol. 12, p. 31.

It is rather interesting that this species ranges the length of the peninsula inasmuch as it evidently scarcely penetrates into Mexico on the central plateau of the mainland, being instead replaced by *S. pulverulenta*. It may be, of course, that the distribution of this species in northern Mexico is not really understood, and the contrast to the range in Baja California therefore more apparent than real. The known records of this species from the peninsula form clusters both to the northwest and to the south of the vast central barrier of the Viscaïno Desert. *Systasea evansi* probably occurs in isolated colonies within the central desert region as well. The species extends into the peninsula from California along the eastern desert escarpment of the northern boreal ranges.

In his description of this species Bell (1941, p. 167) mentions that part of the type series was from Baja California.

ADDITIONAL RECORDS: Aquajita (*sic*), 1 female, III-5-35; 3 miles NW. La Palmilla on Highway Sur 19, 1 male, I-18-59 (H. B. Leech).

Chiomara asychis georgina (Reakirt).

Pyrgus georgina REAKIRT, 1868, Proc. Acad. Nat. Sci. Phil., vol. 20, p. 88.
Pyrgus pelagica WEEKS, 1891, Can. Ent., vol. 23, p. 126; WEEKS, 1905, Illust.
Diurn. Lep., pp. 4-5, pl. 1, fig. 5.

Chiomara asychis, HOFFMANN, 1941, An.Inst. Biol. Mex. vol. 12, p. 264; RINDGE
1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 307.

The northernmost record for this species on the peninsula is the Concepcion Bay locality reported below, which may be very near the northern limits of its range in Baja California.

ADDITIONAL RECORDS: 17.5 miles N. Todos Santos on road to La Paz, 1 female, XII-26-58 (H. B. Leech); 5.5 miles NW. Todos Santos, road to La Paz, 1 male, I-13-59 (H. B. Leech); San Pedro, about 4 miles S. Todos Santos, 4 males, I-13-59 (H. B. Leech); 9 miles S. Todos Santos on Highway Sur 17, 1 male, I-14-59 (H. B. Leech); 2 miles N. Cabo San Lucas on Highway Sur 17, 1 male, I-15-59 (H. B. Leech); Cabo San Lucas, 3 males, I-17-59 (H. B. Leech); 3.4 miles NE. Cabo San Lucas on Highway Sur 19, 1 male, I-1-59 (H. B. Leech); 7 miles N. Santa Anita on Highway Sur 19, 1 male, I-7-59 (H. B. Leech); San Bartolo, 2 males, I-20-59 (H. B. Leech); 25 miles SE. La Paz on Highway Sur 19, 1 male, I-21-59 (H. B. Leech); near ocean beach, 2 miles E. El Coyote, NE. of La Paz, 1 male, XII-30-58 (H. B. Leech); Coyote Cove, Concepcion Bay, 1 male, X-1-41 (Ross and Bohart).

Erynnis spp.

(The half-dozen species of *Erynnis* Schrank known for Baja California are being treated in detail elsewhere. See introduction.)

Pyrgus scriptura (Boisduval).

Syrichthus scriptura BOISDUVAL, 1852, Ann. Soc. Ent. France (ser. 2), vol. 10,
p. 312.

Pyrgus scriptura, PATTERSON and POWELL, 1959, Jour. Lep. Soc., vol. 13,
p. 231.

Known in Baja California only from the single specimen mentioned by Patterson and Powell, this species should be found fairly commonly associated with disturbed areas, particularly agricultural communities, in the north State.

Pyrgus communis albescens Plötz.

Pyrgus tessellata, WRIGHT (not Hewitson, 1866), 1883, Papilio, vol. 3, p. 119.

Pyrgus albescens PLÖTZ, 1884, Mitth. Nat. Ver. Vorpomm., vol. 15, p. 4.

Pyrgus communis albescens, RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser.,
vol. 24, p. 306; POWELL, 1958, Lepid. News, vol. 12, p. 31.

This widespread species should be found throughout the peninsula in all but the most barren areas.

ADDITIONAL RECORDS: 2 miles W. Socorro, 3000', Sierra San Pedro Martir, 2 males, V-26-58 (J. A. Powell, CIS); Socorro, 4000', Sierra San Pedro Martir, 1 male, V-26-58 (J. A. Powell, CIS); 2 miles W. La Sanja, 6500', Sierra San Pedro Martir, 1 female, VI-2-58 (J. A. Powell, CIS); La Grulla, 6500', Sierra San Pedro Martir, 1 male, V-28-58 (J. A. Powell, CIS), 1 female, V-29-58 (J. A. Powell (CIS), 1 female, V-30-58 (J. A. Powell, CIS), 1 female, VI-1-58 (J. A. Powell, CIS); La Encantada, 7000', Sierra San Pedro Martir, 1 male, V-30-58 (J. A. Powell, CIS); 19.2 miles W. La Paz, [El Rancho] Rodrigues, 2 females, XII-31-58 (H. B. Leech); 21.6 miles N. Todos Santos, road to La Paz, 1 male, XII-26-58 (H. B. Leech); 3 miles NW. Miraflores, 1 female, I-19-59 (H. B. Leech).

Pyrgus philetas Edwards.

Pyrgus philetas EDWARDS, 1881, Papilio, vol. 1, p. 46; RINDGE, 1948, Proc. Cal Acad. Sci., fourth ser., vol. 24, p. 306.

Pyrgus philetas has recently been placed as a subspecies of *P. oilus* (L.) (= *P. syrictus* Fab.) but is a distinct species. The two species are broadly sympatric in Mexico and I have taken them together at several widely separated localities on the mainland.

The species in Baja California is confined to the Cape Region. The population phenotypically is similar to those elsewhere except for the commonly expressed tendency of the lower surface of the hindwings in both sexes to be suffused with a smoky-ochreous shade which blurs the usually sharply defined dark bands and spots. This dark, rather than gray-white, color of the hindwings below also is frequent among specimens from the mainland, but it appears as a distinct reddish-brown color, not a vague suffusion, and the dark bands and spots are maintained in sharply defined contrast.

ADDITIONAL RECORDS: 2 miles N. Colonia Calles on Highway Sur 17, 2 males, 1 female, I-15-59 (H. B. Leech); 17.5 miles NW. Cabo San Lucas, 2 females, I-15-59 (H. B. Leech); 2 miles N. Cabo San Lucas on Highway Sur 17, 4 males, I-15-59 (H. B. Leech); Cabo San Lucas, 1 male, 1 female, I-17-59 (H. B. Leech); 7 miles N. Santa Anita on Highway Sur 19, 1 female, I-7-59 (H. B. Leech); 3 miles NW. Miraflores, 6 males, 2 females, I-19-59 (H. B. Leech); Rancho Cayucos, 7 miles up Canyon San Pedro from Caduano, 1 male, V-7-59 (D. Patterson); Rancho Potrero, 14 miles up Canyon San Pedro from Caduano, 1 male, V-10-59 (D. Patterson), 1 female, V-11-59 (D. Patterson); 18.5 miles from La Paz airport on road to Las Planas, 1 female, XII-19-58 (H. B. Leech).

***Heliopetes domicella domicella* (Erichson).**

Syrichthus domicella ERICHSON, 1848, Schomb. Reise in Brit. Guiana, vol. 3, p. 604.

Pyrgus domicella, RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 306.

But few specimens are known from the peninsula; all from the southern region. The species may also occur in the canyons of the Sierra San Pedro Martir, and in the more lushly vegetated canyons and washes of the central desert region.

ADDITIONAL RECORDS: Cabo San Lucas, 1 male, I-17-59 (H. B. Leech).

***Heliopetes ericetorum* (Boisduval).**

Syrichthus ericetorum BOISDUVAL, 1852, Ann. Soc. Ent. France, ser. 2, vol. 10, p. 313.

Heliopetes ericetorum, POWELL, 1958, Lepid. News, vol. 12, p. 31; PATTERSON and POWELL, 1959, Jour. Lep. Soc., vol. 13, p. 232.

This species is confined to Baja California Norte in the mountain regions. It represents, on the peninsula, an essentially Californian intrusion which reaches its southern limits in the Sierra San Pedro Martir.

No additional specimens have been seen.

***Heliopetes laviana laviana* (Hewitson).**

Leucochitonea laviana HEWITSON, 1868, Desc. Hesp., p. 48.

Heliopetes laviana, RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, pp. 306-307.

This wide-spread tropical species occurs commonly in the Cape Region in the mountains as well as the lowlands, and extends north along the Sierra de la Giganta.

The rich yellow olive or cream suffusion of the lower-wing surface is striking in all of these peninsula specimens, but examples from the mainland which display a similar suffusion of equal magnitude are rather frequent. The Baja California populations are, if anything, somewhat less variable in appearance than are those from elsewhere.

ADDITIONAL RECORDS: 39.5 miles S. La Paz on road to Todos Santos, 1 male, XII-24-58 (H. B. Leech); 17.5 miles N. Todos Santos, road to La Paz, 1 male, XII-26-58 (H. B. Leech); San Pedro about 4 miles S. Todos Santos, 6 females, I-13-59 (H. B. Leech); 9 miles S. Todos Santos on Highway Sur 17, 1 female, I-14-59 (H. B. Leech); 2 miles N. Cabo San Lucas on Highway Sur 17, 1 male, I-15-59 (H. B. Leech); 3.4 miles NE. Cabo San Lucas on Highway Sur 19, 2 males, 1 female, I-1-59 (H. B. Leech); 7.7 miles NE. Cabo San Lu-

cas, 1 male, I-1-59 (H. B. Leech); 3 miles NW. La Palmilla on Highway Sur 19, 2 males, I-18-59 (H. B. Leech); Rancho Potrero, 14 miles up Canyon San Pedro from Caduano, 2 males, V-9-59 (D. Patterson), 1 male, V-10-59.

Pholisora catullus (Fabricius).

Hesperia catullus FABRICIUS, 1793, Ent. Syst., vol. 3, p. 348.

Pholisora catullus, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 262;
POWELL, 1958, Lepid. News, vol. 12, p. 31.

Very few specimens of this species are known from Baja California, but the insect probably occurs throughout much of the peninsula.

ADDITIONAL RECORDS: Coyote Cove, Concepcion Bay, 1 female, X-1-41 (Ross and Bohart); Arroyo San Bartolo, 1 mile SE. San Bartolo, 1 male, I-8-59 (H. B. Leech).

***Pholisora mejicanus** (Reakirt).

Nisoniades mejicanus REAKIRT, 1866, Proc. Acad. Nat. Sci. Phil., vol. 18, p. 334.

Pholisora mejicanus, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 262.

This is another of the species listed by Hoffmann without any specific locality for Baja California. I have seen no specimens from the region, and rather doubt that Hoffmann had. It may occur in the Cape Region but for the present must be considered to be of doubtful occurrence on the peninsula.

Pholisora libya (Scudder).

Heteropterus libya SCUDDER, 1878, Bull. Geol. Surv. Terr., vol. 4, p. 258.

Pholisora libya, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 262;
RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 307;
POWELL, 1958, Lepid. News, vol. 12, p. 31.

A desert species, *P. libya* has only been taken, up to now, in Baja California Norte. It should be widely distributed throughout the Viscaino Desert well into the southern portion of the peninsula.

No recently collected material has been seen.

Nastra neamathla (Skinner and Williams).

Lerodea neamathla SKINNER and WILLIAMS, 1923, Trans. Amer. Ent. Soc., vol. 49, p. 145, fig. 33.

This species has not previously been reported for Baja California. *Nastra neamathla* occurs in the Sierra de la Victoria of the Cape Region. The insect is known to be resident on the central plateau of Mexico, and in the gulf area of the United States, particularly. Its distribution in the southwest-

ern states and in western Mexico is not well understood, but this species, as well as another of the genus, occurs in southwestern Arizona and should be expected in the delta region of northeastern Baja California.

MATERIAL EXAMINED: Rancho Potrero, 14 miles up Canyon San Pedro from Caduano, 3 males, 2 females, V-10-59 (D. Patterson), 1 female, V-11-59 (D. Patterson).

**Parphorus decora* (Herrich-Schäffer).

Cobalus decora HERRICH-SCHÄFFER, 1869, Prodr. Syst. Lep., vol. 3, p. 81.
Vorates decorus, RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 310.

Rindge records this insect from Santa Maria Bay in the southern territory. He stated (*in lit.*) that he was unable to locate the specimen under that name in the American Museum collection. It is probable that the specimen was determined as belonging to another species, possibly *Panoquina panoquinoides* and will be found under that series. Females of *P. panoquinoides* from that region frequently are unmarked on the hindwings below except for the very obvious yellow veins, a conspicuous feature of *P. decora*, as well as many other hesperiines. *Panoquina panoquinoides* is, however, the only dark-brown, yellow-veined skipper definitely known to be resident along the coasts of Baja California. I cannot at the present, rule out the possibility that *P. decora* is a part of the Baja California fauna; however, the species is an inhabitant of tropical Mexico and I doubt that it occurs very far north along the western mainland coast. The name is retained here as of very doubtful occurrence.

Copaeodes aurantiaca (Hewitson).

Ancyloxipha aurantiaca HEWITSON, 1868, Descr. Hesp., p. 45.
Copaeodes aurantiaca, RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 308; POWELL, 1958, Lepid. News, vol. 12, p. 31.

Known from numerous localities in the Cape Region and along the east coast of the southern territory, this species has seldom been collected in the north. The insect should be found generally distributed throughout the peninsula and is probably the dominant skipper of the vast central deserts. It should be especially common in the lowland canyons and washes, but can be expected as well in all the mountains except for the highest portions of the northern ranges.

ADDITIONAL RECORDS: Las Encinas, 6000', Sierra San Pedro Martir, 1 male, VI-2-58 (J.A. Powell, CIS), 1 male, VI-3-58 (J.A. Powell, CIS); 21.6 miles N. Todos Santos, road to La Paz, 1 male, XII-26-58 (H. B. Leech); 9

miles S. Todos Santos on Highway Sur 17, 1 female, I-14-59 (H. B. Leech); Cabo San Lucas, 3 males, 3 females, I-17-59 (H. B. Leech); 7.7 miles NE. Cabo San Lucas, 1 female, I-1-59 (H. B. Leech); 3 miles NW. Miraflores, 1 male, I-19-59 (H. B. Leech); Rancho Potrero, 14 miles up Canyon San Pedro from Caduano, 1 male, V-10-59 (D. Patterson), 1 male, V-12-59 (D. Patterson).

**Pseudocopaeodes eunus* (Edwards).

Copaeodes eunus EDWARDS, 1881. Papilio, vol. 1, p. 47.

Pseudocopaeodes eunus, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 267.

This species, recorded for the peninsula without specific reference to locality by Hoffmann, probably inhabits the eastern escarpment of the Sierra Juarez and the Sierra San Pedro Martir. It may also occur in the northeastern delta region, particularly where the land has been somewhat disturbed by agriculture. The insect is known from very close to the border in the California desert foothills and, although I know of no specific Baja California records, I see no reason to doubt that the species resides in the northern State.

**Hesperia juba* (Scudder).

Pamphila juba SCUDDER, 1872, Rept. Peabody Acad. Sci., vol. for 1871, p. 77.

Hesperia viridis, HOFFMANN (not Edwards, 1883), 1941, An. Inst. Biol. Mex. vol. 12, p. 268.

I have seen no specimens of *H. juba* from Baja California but there is no question but that the insect occurs in the northern boreal ranges, at least in the Sierra Juarez. Dr. Jerry Powell (personal communication) reports a sight record in this region of an hesperia which, from his description, almost certainly refers to this species.

Hoffman's hesitant reference to *H. viridis* unquestionably applies to *H. juba* since he restricted the citation to "Baja California (Norte)(?)." Southern California lepidopterists commonly used the name *H. viridis* for the local *H. juba* both in their collections and in publication. As was mentioned, Hoffmann evidently largely depended upon a collection and publications of southern California Lepidoptera for his interpretations of the Baja California fauna. *Hesperia viridis* does not occur in southern California; the nearest population known is in southeastern Arizona where it constitutes an intrusion from the Rocky Mountains. There are, to my knowledge, as yet no published authentic records for *H. viridis* in Mexico.

**Hesperia harpalus leussleri* Lindsey.

Hesperia colorado form *leussleri* LINDSEY, 1940. Ann. Ent. Soc. Amer., vol. 33, pp. 373-375; HOFFMANN, 1941. An. Inst. Biol. Mex., vol. 12, p. 268.

This is another species credited to the fauna by Hoffmann. I know of no specimens from Mexico but the insect can be expected in the Sierra Juarez in

June. The northern boreal ranges will constitute the southern extremity of the Pacific slope range of the holarctic *Hesperia comma* complex. The question of the proper use of *H. comma* or *H. barpalus* for certain of the populations of this complex is purely academic and need not concern us here. That problem is discussed in some detail in my forthcoming paper on the genus (in press).

**Hesperia columbia* (Scudder).

Pamphila columbia SCUDDER, 1872, Rept. Peabody Acad. Sci., vol. for 1871, p. 77.

Hesperia columbia, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 268.

Hesperia columbia is another species of this genus which certainly occurs in Baja California but of which I know of no Mexican specimens. This species is restricted to the Pacific slope and has the southern limit of its range in the northern boreal mountains of Baja California. It is certain to be found in the Sierra Juarez. It will be of considerable interest if it is found to occur in the Sierra San Pedro Martir as well, since it is in these latter mountains that the range of one of its near relatives, the following species, most closely approaches the range of *H. columbia*. I consider these two specifically distinct on morphological grounds, but it is quite possible that in the Sierra San Pedro Martir these characteristics will be found to intergrade.

Hesperia pahaska williamsi Lindsey.

Hesperia pahaska form *williamsi* LINDSEY, 1940, *Ann. Ent. Soc. Amer.*, vol. 33, pp. 375-376.

Hesperia pahaska pop. nr. *williamsi*, PATTERSON and POWELL, 1959, *Jour. Lep. Soc.*, vol. 13, pp. 233-234.

The occurrence of an isolated population of this species in the Sierra San Pedro Martir is rather puzzling. The nearest areas outside of Baja California where other populations of this insect can be expected is in the Sierra Madre Occidental of Sonora and south central Arizona. On the other hand, as mentioned above, the closely related *H. columbia* can reasonably be expected in the Sierra San Pedro Martir. Further, the specimens taken by Powell and Patterson (all males) do indeed resemble *H. columbia* in certain superficial characters of wing pattern, but structurally they are clearly *H. pahaska*. Both species are quite variable in wing markings and the superficial resemblance of these specimens to *H. columbia* falls well within the normal range of variation of populations of *H. pahaska williamsi* from other localities. In the only really diagnostic wing markings separating these two species, the specimens under discussion are typical of *H. pahaska williamsi*.

This species is part of the intrusive austral element from the northwestern portion of the central plateau but is, unlike the others of that ele-

ment discussed in this paper, evidently a boreal inhabitant in Baja California. No additional material has been examined.

Atalopedes campestris (Boisduval).

Hesperia campestris BOISDUVAL, 1852, Ann. Soc. Ent. France, ser. 2, vol. 10, p. 316.

Atalopedes campestris, POWELL, 1958, Lepid. News, vol. 12, p. 31.

This widespread species inhabits the northern mountains and can be also expected anywhere in the more heavily vegetated portions of the lowlands, particularly where agricultural activities have slightly modified the environment.

ADDITIONAL RECORDS: Las Encinas, 6000', Sierra San Pedro Martir, 1 male, V-27-58 (J. A. Powell, CIS); 21.6 miles N. Todos Santos, road to La Paz, 1 male, XII-26-58 (H. B. Leech).

Ochlodes agricola (Boisduval).

Hesperia agricola BOISDUVAL, 1852, Ann. Soc. Ent. France, ser. 2, vol. 10, p. 314.

Ochlodes nemorum, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 269.

Ochlodes agricola, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 269.

Ochlodes agricola agricola, POWELL, 1958, Lepid. News, vol. 12, p. 32.

Ochlodes agricola represents a California element in Baja California. The species probably does not extend south of the northern boreal ranges where it can be expected in the western lowlands and foothills of the major mountains. It may be especially associated with riparian and heavily wooded habitats.

ADDITIONAL RECORDS: 7 miles. SE. Santo Tomas, 1 female, V-25-58 (J. A. Powell, CIS).

Ochlodes sylvanoides (Boisduval).

Hesperia sylvanoides BOISDUVAL, 1852, Ann. Soc. Ent. France, ser. 2, vol. 10, p. 313.

Ochlodes sylvanoides, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 269.

Ochlodes sylvanoides sylvanoides, POWELL, 1958, Lepid. News, vol. 12, p. 32.

The comments made above for *O. agricola* apply as well to *O. sylvanoides* and need not be repeated. This skipper, however, is less likely to express a particular preference for stream-bottom habitats except in the lowlands or wooded situations, being equally partial to dry open hillsides and savanna.

No additional material has been seen.

Hylephila phyleus (Drury).

Papilio phyleus DRURY, 1770, Ill. Exot. Ent., vol. 1, p. 25, pl. 13, figs. 4, 5.
Hylephila phylaeus, RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24,
p. 308.

The genus *Hylephila* is customarily treated near the genus *Pseudocopaesodes*. It is placed in the present sequence in this paper because, although I cannot devote the space here to develop my argument, I believe that the genera *Yvretta*, *Hylephila*, *Polites*, *Wallengrenia*, at least one species of the genus *Pompies* (but not the type species), and perhaps *Stinga*, are very closely related and should be associated in any linear treatment. This opinion is based upon genitalic resemblances which, by and large, in the Hesperinae are relatively useful for interpreting relationships.

Hylephila phyleus is common in the lowlands of the Cape Region. Elsewhere on the peninsula it may be associated primarily with areas under cultivation, particularly gardens in settlements.

ADDITIONAL RECORDS: 17.5 miles NW. Cabo San Lucas, 1 male, 1 female, I-15-59 (H. B. Leech); Cabo San Lucas, 1 male, I-17-59 (H. B. Leech); 3.4 miles NE. Cabo San Lucas on Highway Sur 19, 2 males, 3 females, I-19-59 (H. B. Leech); 18.5 miles from La Paz airport on road to Las Planas, 1 male, XII-19-58 (H. B. Leech); Arroyo Saltito near Las Cruces, E. of La Paz, 1 male, 5 females, I-23-59 (H. B. Leech); 12.4 miles E. La Paz on road to Las Cruces, 1 male, I-4-59 (H. B. Leech); 4 miles E. La Paz on road to Las Cruces, 1 male, XII-23-58 (H. B. Leech).

Polites sabuleti (Boisduval).

Hesperia sabuleti BOISDUVAL, 1852, Ann. Soc. Ent. France, ser. 2, vol. 10,
p. 316.

Polites sabuleti, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 268;
RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 309.

Polites sabuleti sabuleti, POWELL, 1958, Lepid. News, vol. 12, p. 31.

Polites sabuleti tecumseh, PATTERSON and POWELL (not Grinnell, 1903), 1959,
Jour. Lep. Soc., vol. 13, p. 232.

There appear to be at least three distinct geographic segregates of this species in Baja California. As more material becomes available I would not be surprised to find that the species is represented by at least five geographic segregates. The nature of such segregates within this species remains to be determined. In view of the phenotypic diversity expressed by this insect through its extensive ecological range in western North America, inquiries into the possible direct environmental influence upon the phenotype seem appropriate. The appearance of apparently polytypic populations in similar eco-

logical situations further suggests the need for such investigations.

The members of the populations occupying the boreal uplands of the Sierra San Pedro Martir, although slightly larger, resemble those of the populations referred to under the name of *P.s. tecumseh* (Grinnell) which inhabit higher elevations in the Sierra Nevada of California. I am inclined to doubt, however, that these two population assemblages phenotypically reflect similar genetic constitutions.

Populations of the lowlands to the west of the boreal ranges are relatively pale and less contrastingly marked below than those mentioned above. They correspond to the nomenotypic subspecies and represent a southern penetration of the coastal populations of California.

To the east of the northern boreal ranges and in the delta region doubtless will be found other populations which have a very pallid appearance with very pale or no markings below. Such populations would represent the populations designated as *P.s. chusca* (Edwards) of the Sonoran desert.

I have seen one specimen from the southern territory of the peninsula; this is a female from Santa Maria Bay, recorded by Rindge, and presents yet another phenotype. This is much larger than *P.s. tecumseh* which it otherwise somewhat resembles above. The hindwings below are rather striking. The dark ground color and contrasting spots which are prolonged along the veins in *P. s. tecumseh* are characters also displayed by this specimen but these tendencies are amplified and modified as follows. The ground color is uniformly very dark brown (probably chocolate in fresh specimens). The cream-colored spots are reduced so that the basal loop is obsolete being represented by thin bars on the veins on each side of the cell. The spots of the macular band are reduced in length but not in width; hence the band is narrow but uninterrupted, with a straight, not sinuate, posterior arm. The cubital and anal veins are pale, as are all others distad of the macular band. The specimen resembles to a considerable extent an undescribed species from the Mexican mainland nearby, but is more typical of *P. sabuleti* in the form of the macular band so I am placing it here, at least for the present. The Santa Maria Bay locality is quite isolated from the Sierra de la Victoria where still other populations of this species can be expected.

ADDITIONAL RECORDS: La Grulla, Sierra San Pedro Martir, 1 male, 4 females, IX-3-61 (D. Patterson); La Encantada, Sierra San Pedro Martir, 2 males, 4 females, IX-4-61 (D. Patterson).

Polites mystic sonora (Scudder).

Ochlodes sonora SCUDDER, 1872, Rept. Peabody Acad. Sci., vol. for 1871, p.78.
Polites mystic sonora, PATTERSON and POWELL, 1959, Jour. Lep. Soc., vol. 13, p. 233.

This insect attains the southern limit of its range in the Sierra San Pe-

dro Martir. The specimens I have seen from this region resemble samples from the Transverse Ranges of southern California except that their coloring above is slightly brighter and paler. On the lower surface the pale olive over-scaling has a more yellowish cast than is usual in more northern specimens. The stigma and post-stigmal patch of the males above are slightly narrower than in specimens from California.

No additional records have come to my attention.

Paratrytone melane melane (Edwards).

Hesperia melane EDWARDS, 1869, Trans. Amer. Ent. Soc., vol. 2, p. 312.

Poanes melane, HOFFMANN (in part), 1941, An. Inst. Biol. Mex., vol. 12, p. 270.

Paratrytone melane melane, POWELL, 1958, Lepid. News, vol. 12, p. 32.

The nomenotypic subspecies of this insect is restricted in Baja California to the Sierra Juarez, the Sierra San Pedro Martir and the less xeric of the western foothills to the north. These populations represent the California element which penetrates into Mexico from the Laguna Mountains of southern California.

ADDITIONAL RECORDS: 3 miles S. Encinas, Sierra San Pedro Martir, 1 male, 2 females, VI-3-58 (J. A. Powell, CIS).

Paratrytone melane subsp.

Poanes melane, RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 309; POWELL, 1958, Lepid. News, vol. 12, p. 32.

The available sample of the populations inhabiting the Sierra de la Victoria of the Cape Region is comprised of only two specimens. Nevertheless, these two males are sufficiently distinctive in appearance to make me almost certain that the populations they represent constitute a very distinct geographical segregate. Powell (1958, p. 32) offered a similar opinion.

Males of the California population invariably have present on the upper wing surface considerable ochre overscaling on the forewing except for a large dark patch proximal to the discal spots and posterior to the cell. This dark patch is basally demarked by a particularly rich overscaling on the basal third of the wing. The overscaling imparts an impression of a very dark, yet ochre colored wing bearing a large black or dark brown discal spot.

The Cape Region specimens almost totally lack this overscaling; hence the forewing is uniformly brown, without a conspicuous black discal patch. The discal ochre spots are very reduced in one specimen and almost absent in the other. The hindwings are as dark as the forewings. The macular band is narrowed as in the Mexican subspecies but not particularly shortened, and even more vaguely defined than is the case with the northern subspecies. The Cape specimens differ from the Mexican populations in having even darker

forewings with much smaller spots, and in the very vaguely defined spots of the hindwing.

On the lower surface of the wings the Cape specimens resemble those of the California populations but have less of the reddish cast basally, and on the hindwings the spots are sharply defined outwardly, as in Mexican examples, but they scarcely contrast to the ochre-brown ground color of the wing. The abdominal venter is a rich ochre, neither buff colored as in Mexican specimens, nor pale buff-ochre as is the case in samples from California.

No additional material was examined.

***Euphyes vestris vestris** (Boisduval).

Hesperia vestris BOISDUVAL, 1852, Ann. Soc. Ent. France, ser. 2, vol. 10, p. 317.
Atrytone ruricola, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 271.

It is likely that *E. vestris* occurs in the northern boreal ranges of Baja California. The species is known from San Diego County in California, and probably can be found associated with damp meadows in the higher mountains. The presence of the insect in Baja California requires confirmation however, since Hoffmann's citation in all probability was based upon an inference similar to that above.

***Amblyscirtes cassus** Edwards.

Amblyscirtes cassus EDWARDS, 1883, Papilio, vol. 3, p. 72; HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 272.

I am aware of no examples of this species from Baja California, and I rather doubt its presence in the region. The insect inhabits southeastern Arizona and the Sierra Madre Occidental of Sonora. Hoffmann's statement placing *A. cassus* in the Baja California fauna was punctuated with a question-mark and it must, for the present, continue to be regarded as a doubtful resident.

***Amblyscirtes tolteca tolteca** Scudder.

Amblyscirtes tolteca SCUDDER, 1872, Rept. Peabody Acad., vol. for 1871, p. 76.
Stomyles tolteca, RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 309.

Rindge (*in lit.*) informs me that the specimen he recorded from the Cape Region is not in the series of this species at the American Museum. The specimen has probably been re-identified as belonging to another species and will ultimately be properly recorded so that this name can be definitely retained on or dropped from the list of the Baja California fauna. It is retained here as a doubtful inhabitant.

Lerodea eufala eufala Edwards.

Hesperia eufala EDWARDS, 1869, Trans. Amer. Ent. Soc., vol. 2, p. 311.

Lerodea eufala, HOFFMAN, 1941, An. Inst. Biol. Mex., vol. 12, p. 280; RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 309.

Lerodea arabus, RINDGE (in part) (not Edwards, 1882) 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 309.

Lerodea eufala is known at present only from the lowlands of the Cape Region. The species probably also occurs in the northeast delta region as well as along the west coast of the northern state where it should be found associated with agriculture or settlements.

The material examined from the Cape Region differs only slightly when in fresh condition from comparable specimens from California. The basal and discal portions of the hindwings above in males are more distinctly a very pale olive gray which clearly contrasts to the broad grayish brown marginal border. The interface between these areas is accentuated by a crescentic series of faint paler spots. Older museum specimens from the same region show somewhat less contrast on the hindwings and thus resemble more closely specimens from California and Arizona. The female mentioned below from the Cape is fresh but very dark brown above with none of the pale gray hindwing discal and basal area seen in the males.

ADDITIONAL RECORDS: 21.6 miles N. Todos Santos, road to La Paz, 1 male, XII-26-59 (H. B. Leech); Cabo San Lucas, 2 males, 1 female, I-16-59 (H. B. Leech); 1.3 miles N. San Jose Viejo on Highway Sur 19, 2 males, I-7-59 (H. B. Leech); Muertos Bay, 1 male, 1 female, XII-29-38 (F. H. Rindge, AMNH).

Lerodea dysaules Godman.

Lerodea dysaules GODMAN, 1900, Biol. Centr.-Amer. Rhop., vol. 2, p. 500, p. 95, figs. 19,20.

Lerodea arabus, RINDGE (in part) (?not Edwards, 1882), 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 309.

I have seen only two male specimens of this species from Baja California. The specimen recorded by Rindge from Pulpito Bay has the large hyaline spots fully developed on the forewing, with distinct traces of a pale band of spots above and below on the hindwing, where also the vanal angle is conspicuously darkened, as dark as the costal wedge. The specimen recorded below is a darker gray-brown with much reduced spots on the forewing above. Only the apical spots are large and hyaline. The spot in cell M_3 (space 3) is also hyaline but is a minute point. The discal cell spot and that in cell Cu_1 (space 2) are nearly obsolete and not hyaline. There is no pale spot in

Cu₂ (space 1b), nor a trace of pale spots on the hindwing. Below on the forewing this specimen is spotted as above except that the pale spot of cell Cu₁ is large and crescentic, and on the hindwing there are no pale spots and the vanal angle is not particularly darkened, the costal wedge being conspicuously darker. Genitally the two specimens are identical.

I am not sufficiently familiar with this or *L. arabus* Edwards from Arizona to comment on the specific or subspecific distinctness of these. I here follow the Evans catalogue, but must point out that the more northern, Rindge specimen would key out in Evans to *L. arabus*, while the individual from the Cape Region keys to *L. dysaules*.

ADDITIONAL RECORDS: Cabo San Lucas, 1 male, I-17-59 (H. B. Leech).

Calpododes ethlius (Stoll).

Papilio ethlius STOLL, 1782, Pap. Exot., vol. 4, p. 212, pl. 392, figs. A, B.
Calpododes ethlius, POWELL, 1958, Lepid. News, vol. 12, p. 32.

I have had no field experience with this skipper in other than a cultivated area. The only specimens known at present from Baja California were taken in flower gardens at the settlement of Colonia Guerrero (Powell, 1958). This is possibly one of the few hesperiids the adults of which are inclined to travel considerable distances, and the insect can probably occur anywhere in Baja California that *Canna* is grown. It will doubtless be found in and about towns where there exists a suitable nectar source and an abundance of the larval food plant.

No additional records.

Panoquina panoquinoides errans (Skinner).

Pamphila errans SKINNER, 1892, Ent. News, vol. 3, p. 174.

Panoquina errans, HOFFMANN, 1941, An. Inst. Biol. Mex., vol. 12, p. 274;
RINDGE, 1948, Proc. Cal. Acad. Sci., fourth ser., vol. 24, p. 310.

Panoquina panoquinoides errans, POWELL, 1958, Lepid. News, vol. 12, p. 32.

Associated with a coastal grass, this species ranges from southern California south along the coast of Baja California to the Cape Region, then north along the gulf coast nearly, if not quite, to the delta region. The species exhibits a clinal change from Santa Barbara, California, to Cabo San Lucas. Specimens from the Cape Region are slightly larger and darker than are those from California. On the lower surface the ground color becomes almost black in the south, with the scattered yellowish overscaling conspicuous in contrast. The short band of spots, usually quite prominent on the hindwing below in northern specimens, becomes quite reduced, often obsolete, especially in females, in southern specimens, and the pale veins of this lower wingsurface become more brightly yellow and conspicuous. Material examined from

near San Quintín Bay are intermediate in these characters.

ADDITIONAL RECORDS: 5.5 miles NW. Todos Santos, road to La Paz, 1 female, I-13-59 (H. B. Leech); Punta Lobos, 1 mile SE. Todos Santos, 5 males, 1 female, XII-25-58 (H. B. Leech); San Pedro, about 4 miles S. Todos Santos, 1 male, I-13-59 (H. B. Leech); Cabo San Lucas, 1 male, I-1-59 (H. B. Leech); Buena Vista, Highway Sur 19, 1 male, 1 female, I-6-59 (H. B. Leech); Bahía de los Muertos, 2 females, XII-20-58 (H. B. Leech).

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